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Abstract

A semiconductor device comprising a metal-oxide-semiconductor field-effect transistor well controllably brings the work function of a gate electrode close to the intrinsic mid gap energy of silicon, thereby lowering the concentration of impurities in a channel. By this, the deterioration of carrier mobility is prevented and a metal-oxide-semiconductor field-effect transistor is obtained. A gate electrode has a multi-layer structure of a p-type polycrystalline or a single-crystalline germanium film 3 and a low resistance conductive film 4.